

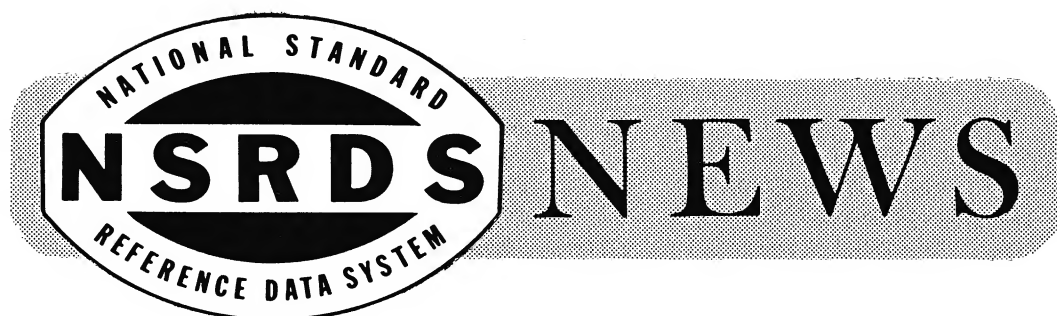
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# NEWS

*The NSRDS was established to make critically evaluated data in the physical sciences available to science and technology on a national basis. The NSRDS is administered and coordinated by the NBS Office of Standard Reference Data.*

## CRYOGENIC DATA CENTER

The Cryogenic Data Center (CDC) of the Bureau's Boulder Laboratories is the major U.S. source of bibliographic information and data on the cryogenic (low-temperature) properties of solids, liquids, and gases. Its primary mission is to compile and critically evaluate data on cryogenic properties and measurements.

As a result of its comprehensive examination and storage of published material in the field of cryogenics, the CDC is able to offer several bibliographic services to the public: Weekly and quarterly reference lists of published papers, custom literature searches on any topic in cryogenics, and consultative information services.

The particular value of the CDC's services stems from the nature of the staff: the compilers, evaluators, and literature search personnel are professionals in the field of cryogenics. The extensive indexing and cross-referencing of each paper and article included in the storage files is done by these professionals to ensure that all pertinent titles and data are retrieved on request. The files contain over 65,000 documents at present, with about 7500 added each year.

The principal output of the CDC is critically evaluated data, taken mainly

from published sources. The raw data are obtained from a comprehensive review and examination of hundreds of journal articles and reports. Each property measurement is analyzed for its validity and probable accuracy and precision before being compiled into a table or chart of evaluated data. These critical evaluations and compilations then may become part of the National Standard Reference Data System. Examples of the sort of data dealt with by the Evaluation and Compilation Unit are: thermodynamic and transport properties of fluids and fluid mixtures; electrical, magnetic, optical, and surface properties of pure fluids; and thermal, electrical, and transport properties of elemental metals, dielectrics, and selected alloys. Two recent publications of critically evaluated data are NBS Monograph 94, *Thermodynamic and Related Properties of Parahydrogen from the Triple Point to 100 °K at Pressures to 340 Atmospheres*<sup>1</sup> (75 cents, SD Catalog No. C13.44:94) by H. M. Roder, L. A. Weber, and R. D. Goodwin, and NSRDS-NBS 27, *Thermodynamic Properties of Argon from the Triple Point to 300 K at Pressures to 1000 Atmospheres*<sup>1</sup> (\$1.25, SD Catalog No. C13.48:27), by A. L. Gosman, R. D. McCarty, and J. G. Hust.

The huge mass of data needed as raw materials for the evaluation process is acquired by the Documentation Unit. Information on cryogenic properties is widely scattered throughout the technical literature, and the Documentation Unit's cryogenic specialists constantly scan more than 300 journals in search of this information. In

addition to this cover-to-cover examination of current literature, there is close scrutiny of three title-announcement periodicals and twenty abstracting services.

In this way, more than 325 000 papers, titles, and abstracts were examined in 1969. Copies of those items containing data on the properties of interest are then obtained from the journal or author. The papers are stored on microfilm or microfiche, or occasionally in full size.

Each paper selected for storage is indexed on master catalog cards. Codes are assigned to indicate language, type of article, form of data, temperature range, types of properties and other subject information. The philosophy has been to use a rather simple indexing system and highly skilled, knowledgeable indexers, instead of a highly structured indexing language and relatively unskilled indexers. The quality of the output is a direct result of the high quality of the indexing.

All the information about the paper, including author, references and subject indexing, is then entered on punched cards and stored on magnetic tape. Programs have been written to retrieve references according to subject, author, or other index terms, permitting searches to be made on narrowly defined subjects.

The CDC can thus supply custom bibliographies on any specific topic in cryogenics. Each output list is carefully reviewed by a member of the professional staff to insure that it adequately covers the customer's request. The cost of a search is based on the



Hans Roder (left), leader of the Data Compilation Group, discusses some requirements for thermodynamic charts with Victor Johnson (center), Chief of the Cryogenic Data Center, and Neil Olien, leader of the Documentation Group.

professional and computer time used, and may vary from \$30 for a simple search to several hundred dollars for a comprehensive list of all publications dealing with the properties of, say, helium.

The system has been designed for versatility, so that it isn't limited to the straightforward tasks mentioned above. For example, requests were filled for information on the growth of research in transport properties of fluids as compared to the rest of cryogenics, and on the growth of superconductivity research. Another complex request was for a list of all laboratories in Western Europe involved in superconductivity research.

Besides the critical evaluation of data and the custom bibliographies, the large amount of information scanned on a current basis permits the distribution of complete listings of current published literature in cryogenics. These listings give up-to-date notice of articles, papers, patents, and reports for cryogenics as a whole, and for the subcategories of superconductivity and liquefied natural gas.

The oldest of the three listings is the Current Awareness Service (CAS), printed weekly since 1964. It lists all articles and papers on cryogenics encountered by the staff during their

scan of journals, title announcements, and patents. More than 8900 publications were listed in the CAS in 1969, giving the date, page, volume, title and author of each article.

The other two periodicals published by the Data Center appear every 3 months, providing the same type of information as the CAS, but limited to the subjects of Superconducting Devices and Materials, and Liquefied Natural Gas. The SD&M Quarterly is produced in cooperation with the Office of Naval Research, and usually includes some 100 to 200 titles per issue. The LNG Quarterly, begun in 1970 in cooperation with the American Gas Association, is about the same size.

The subscription price of each of the three series is \$15 per year in North America, or \$20 to the rest of the world by airmail. Checks, made payable to NBS, Department of Commerce, should be mailed to the Cryogenics Data Center, Room 2022 Cryogenics Building, NBS, Boulder, Colo. 80302. Foreign subscribers can use UNESCO coupons, or checks made out to any U.S. bank.

#### TABLES OF ATOMIC SPECTRA

The recent publication of NSRDS-NBS 3, section 3, *Selected Tables of*

*Atomic Spectra, Atomic Energy Levels and Multiplet Tables, C I, C II, C III, C IV, C V, C VI,*<sup>1</sup> (\$1, SD Catalog No. C13.48:3/Sec. 3) by Charlotte E. Moore is the third and latest Section of a series that is being prepared in response to the increasing demand for a current revision of two sets of tables, by the same author, containing data on atomic spectra as derived from analysis of optical spectra. These data were originally presented in two sets of tables, both by Charlotte E. Moore. *Atomic Energy Levels*, NBS Circular 467, consisted of three volumes published in 1949, 1952, and 1958, while *An Ultraviolet Multiplet Table*, NBS Circular 488, was published from 1950 to 1962. In the present Section, Part A contains the atomic energy levels and Part B the multiplet tables. All six spectra of carbon, C I through C VI, are included. The earlier NSRDS-NBS 3, Section 1 (35 cents)<sup>1</sup> includes three spectra of silicon, Si II, Si III, Si IV; NSRDS-NBS 3, Section 2 (20 cents)<sup>1</sup> covered similar data for Si I.

#### CHEMICAL KINETICS SURVEY

The Committee on Data for Science and Technology (CODATA) of the International Council of Scientific Unions, has established a Task Group on Data for Chemical Kinetics. The Group is chaired by Dr. Sidney W. Benson, Stanford Research Institute. One of the tasks singled out by the Group for immediate implementation is the identification of work now in being (or planned) involving the compilation and evaluation of rate data for each of the member States. Dr. T. N. Newton, Los Alamos Scientific Laboratories, has been designated to carry out this task in the United States. The Office of Standard Reference Data is helping with the gathering of this information.

For the purposes of this survey, chemical kinetics has been broadly defined. It includes rates and mechanisms of chemical reactions in all



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phases, energy and charge transfer processes, etc. The Task Group is concerned with data compilations and evaluations of rates, cross sections and quantum yields, both published or unpublished, be they single reaction or a set of reactions; it is not attempting to record experimental programs in chemical kinetics.

A survey has been sent to chemists working in chemical kinetics, molecular dynamics and related kinetic areas. The Task Group is seeking to reach all workers in the field. Anyone who is conducting such work should contact

the Task Group by writing to Dr. L. H. Cavantman, Office of Standard Reference Data, National Bureau of Standards, Washington, D.C. 20234.

#### NN AND ND INTERACTIONS

NSRDS-UCRL-20000NN, *NN and ND Interactions (above 0.5 GeV/c)*—*A Compilation*, August 1970, by Odette Benary, LeRoy R. Price, and Gideon Alexander, is the third publication by the Berkeley Particle Data Center, Lawrence Radiation Laboratory, within its NSRDS series of pub-

lications. This compilation covers pp, np, nn, pd, and np interactions in the range of beam moment from 0.5 to 70 GeV/c. The cutoff date of the 165 papers covered is July 1970. Included in this publication are a complete listing of the selected data, a momentum index, a keyword index and a reference list. Copies of NSRDS-UCRL-20000NN, August 1970 as well as the earlier two compilations may be obtained by request to the Berkeley Particle Data Center, Lawrence Radiation Laboratory, Berkeley, Calif. 94720.